

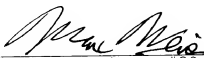
REMARKS

The specification has been amended to provide a cross-reference to the previously filed International Application.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17; particularly, extension of time fees.

Respectfully submitted,

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By   
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09/763968

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PATENT  
2282-0140P

## IN THE U.S. PATENT AND TRADEMARK OFFICE

APPLICANT: SAKAGUCHI, Futoshi et al.  
INTL APPLN. NO.: PCT/JP99/04723 GROUP:  
FILED: February 28, 2001 EXAMINER:  
FOR: HYDROCRACKING METHOD AND CATALYST

LETTER**BOX PATENT APPLICATION**Assistant Commissioner for Patents  
Washington, D.C. 20231

February 28, 2001

Sir:

The PTO is requested to use the amended sheets/claims attached hereto (which correspond to Article 34 amendments or to claims attached to the International Preliminary Examination Report) during prosecution of the above-identified national phase PCT application.

Respectfully submitted,

BIRCH, STEWART, KOLASCH &amp; BIRCH, LLP

By



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Attachment

## PCT

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference IJE9903PCT	<b>FOR FURTHER ACTION</b> See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/JP99/04723	International filing date (day/month/year) 31/08/1999	Priority date (day/month/year) 01/09/1998
International Patent Classification (IPC) or national classification and IPC C10G47/12		
Applicant JAPAN ENERGY CORPORATION et al.		


1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 7 sheets, including this cover sheet.

☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of 4 sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☒ Certain observations on the international application

Date of submission of the demand  20/03/2000	Date of completion of this report  04.12.2000
Name and mailing address of the international preliminary examining authority:   European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized officer  de Cauwer, R  Telephone No. +49 89 2399 7344



**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT**

International application No. PCT/JP99/04723

**I. Basis of the report**

1. This report has been drawn on the basis of *(substitute sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to the report since they do not contain amendments (Rules 70.16 and 70.17).)*

**Description, pages:**

1-20 as originally filed

**Claims, No.:**

1-14 with telefax of 08/09/2000

**Drawings, sheets:**

1/3-3/3 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
- ☐ the claims, Nos.:

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☐ the drawings, sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

*(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)*

6. Additional observations, if necessary:

**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. Statement

Novelty (N)	Yes: Claims
	No: Claims 1-14
Inventive step (IS)	Yes: Claims
	No: Claims 1-14
Industrial applicability (IA)	Yes: Claims 1-14
	No: Claims

2. Citations and explanations

**see separate sheet**

**VIII. Certain observations on the international application**

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

**see separate sheet**

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**Re Item V**

**Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

Novelty - claim 1

Claim 1 is a claim for a method of hydrocracking hydrocarbon oils with a 10 % distillation temperature of 300°C or higher, comprising the steps of: precontacting the hydrocracking catalyst with an organic nitrogen compound; and contacting a feed oil substantially comprised of hydrocarbon oils and hydrogen with the hydrocracking catalyst that has been contacted with the organic nitrogen compound in order to obtain a hydrocarbon oil with a lower boiling point than that of the feed oil; the hydrocracking catalyst consisting of W, Mo, Ni and Co, on a carrier made from a porous refractory oxide, the organic nitrogen compound being an organic nitrogen compound having a boiling point that is lower than a 50% distillation temperature of the feed oil and that is higher than 200°C.

The following prior art documents are considered to be relevant:

D4: FR-A-2 668 951 (INST FRANCAIS DU PETROL) 15 May 1992 (1992-05-15)

The document D4 discloses a catalyst that can be used for hydrocracking hydrocarbon oils with a 10% distillation temperature of 300 °C or higher (p 11, table 1 & p 12), being passivated with a basic nitrogen containing compound (p 5, line 20-30 & p 7, line 3-15), like thiourea, quaternary ammonium components, etc (p 7, line 3-14), prior to exposing the catalyst to the feedstock (p 8, line 16-19), containing a hydrogenation active metal selected from Ni, Mo or W on a support of alumina or mixed silicium-alumina (p 2, line 19-23) to obtain lighter and more valuable products .

Thus, the subject-matter of claim 1 lacks novelty over D4 (Article 33 (2) PCT).

Novelty - claim 2 - 11

D4 further discloses that the feed can be gas oil (p 1, line 12) ; the step of sulfiding and contacting the catalyst with a nitrogen compound occur simultaneously (p6, line 12-30)

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; the catalyst may be passivated in-situ by mixing a suitable passivating agent with the initial feedstock to be contacted with the catalyst (p 5, line 23-27), that the passivating petroleum fraction contains 0.015 wt% nitrogen (p 12, table 2), that the hydrocracking catalyst contains 0.05 to 10 wt% of nitrogen ; that the passivating petroleum fraction is kerosene (p 6, line 11).

For these reasons and because claims 2 - 11 are dependent on claim 1, which does not meet the requirements of Article 33 (2) PCT, they too do not meet the requirements of the PCT with respect to novelty.

Inventive step - claims 1 - 11

Since D4 is concerned with the same technical problems as the application, notably the provision of a catalyst which is resistant to deactivation by nitrogen compounds, no inventive step can be recognized (Article 33 (3) PCT).

Novelty - claim 12

The applicant should note that the expression "which is used for hydrocracking a feed oil derived from petroleum by contacting the feed oil and hydrogen with the hydrocracking catalyst to obtain a hydrocarbon oil with a boiling point lower than that of the feed oil" is only an indication of an intended use which cannot limit the claimed subject-matter.

Furthermore, it should be noted that a catalyst cannot be defined in terms of the boiling point of a feed, this renders the claim unclear (Article 6 PCT), as the feed is not necessarily present.

Thus, claim 12 is a product claim for a hydrocracking catalyst, comprising: a carrier made from a porous oxide; a hydrogenation active metal component, and an organic nitrogen compound with a boiling point that is higher than 200 °C, the content of the organic nitrogen compound being not less than 0.01 wt% by nitrogen weight per the hydrogenation catalyst.

However, all the technical features of claim 12 are already disclosed in D4 (see reasoning claim 1, the content of nitrogen in the catalyst varies from 0.05 to 10 wt% (p 9, line 13-14)).

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Therefore, claim 12 does not meet the requirements of Article 33 (2) PCT.

Novelty - claims 13 - 14

Since claims 13 - 14 are dependent on claim 12, which does not meet the requirements of Article 33 (2) PCT, they too do not meet the requirements of the PCT with respect to novelty.

Inventive step - claims 12 - 14

Since D4 is concerned with the same technical problems as the application, notably to provide a hydrocracking method and a hydrocracking catalyst used by this method with which the initial deactivation rate of the hydrocracking catalyst is slowed and the middle distillate yield is improved and the activity following initial deactivation is improved, and solves the problem in the same way, notably the passivation of the catalyst with a nitrogen compound boiling above 200°C, prior to hydrocracking, no inventive step can be recognized (Article 33 (3) PCT).

**Re Item VIII**

**Certain observations on the international application**

Claim 2 is drafted as an independent claim, relating to "a method of hydrocracking hydrocarbon oils derived from petroleum, ...", but it is in fact concerned with the same scope as claim 1, relating to "a method of hydrocracking hydrocarbon oils ...". Thus claims 1 and 2 lack conciseness.

It would therefore appear more appropriate if claim 2 were drafted as a dependent claim to claim 1 (Rule 6.4 (a) & (b)).

In claim 12 the expression "which is used for hydrocracking a feed oil derived from petroleum by contacting the feed oil and hydrogen with the hydrocracking catalyst to obtain a hydrocarbon oil with a boiling point lower than that of the feed oil" is only an indication of an intended use and therefore does not limit the claimed subject-matter.

The hydrocracking catalyst claimed in claim 12 is defined in terms of feed

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characteristics (..an organic nitrogen compound with a boiling point that is lower than the 50% distillation temperature of the feed oil...). This cannot be a limiting feature as the catalyst is independent of the feed. Thus, claim 12 does not meet the requirements of Article 6 PCT.

Claim 14 lacks clarity because it is defined in terms of a desired result ("which is produced by contacting ... with the catalyst"). Thus claim 14 does not meet the requirements of Article 6 PCT.